

Application No. 10/734,742
Response dated January 4, 2007
Reply to Office Action of October 4, 2006

Remarks

In response to the office action dated October 4, 2006, claims 3-6, 9-11, 14, 20, 23, 28-33 and 37-56 are canceled and claims 1, 8, 12, 13, 15, 16, 24, 27, 34 and 36 are amended to focus on the elected invention. Generic claims and claims drawn to non-elected subject matter are being canceled without prejudice to their being asserted in a divisional or other continuing application.

Claims 26 and 27 do not read on Species III as incorrectly stated in the election.

The rejection of claims 44 and 50 is moot in view of the cancelation of these claims.

Original claims 1-5, 9, 10, 12, 13, 15, 24, 27, 31, 35, 37-41, 49, 50, 53 and 54 were rejected under 35 U.S.C. §102(b) as being anticipated by Miller et al. U.S. Patent No. 4,068,379, while original claims 1, 3-6, 9, 10, 15, 24-26, 33-35, 37, 39-41, 45, 49, 50, 53 and 56 were rejected under 35 U.S.C. §102(b) as being anticipated by Kesling U.S. Patent No. 5,263,859. Original claims 6-8, 11, 14, 16-23, 33, 34, 36, 42-48 and 56 were rejected under 35 U.S.C. §103(a) as being unpatentable over Miller, considered alone.

As a result of the amendments above, all of the pending claims contain limitations from claims rejected under 35 U.S.C. §103(a), and overcome the rejections under 35 U.S.C. §102(b). Neither reference anticipates an orthodontic appliance having an compliant attachment to a bracket of bonding structure at points around the perimeter of the outer peripheral portion of the bonding structure with the inner central portion of the bonding structure is substantially free from attachment to the bracket, to provide compliant movement between the bonding structure or adhesive and an object striking the bracket upon impact.

The present invention is based in part on the determination by the inventor that the debonding of orthodontic appliances is often the result of impact to the appliance rather than force exerted on the appliance. The claimed embodiment of the invention provides compliancy between bonding structure that is bonded to the teeth with adhesive and an object striking the external surface of the appliance, for example, against the tie wings of a

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bracket. This is concept totally absent from the prior art.

The Kesling reference was cited for its disclosure of a resilient bracket pad wherein the bonding structure itself is elastomeric. Kesling's elastomeric bracket pad is not provided for the purpose of resisting impact to the bracket, and does not disclose any appreciation that such impact resistance is desirable. The Kesling pad is provided to facilitate removal of the bracket by making a pad that can be compressed with tweezers to crack the adhesive to facilitate bracket removal.

The Miller et al. reference is cited for the last sentence of text in the last paragraph of the background section of the patent, which paragraph states:

Another base of this type is a pad of metal screen or mesh, to which the orthodontic appliance is attached by spot welding. Such devices, currently sold by American Orthodontics, Sheboygan, Wis., suffer from a weak attachment of the appliance to the pad, as well as not providing the strength of bonding of a plastic base or the rigidity of a metal base, and permitting an even greater amount of cement to pass through the base pad and contact the appliance. In a modified type of such a device, also sold by American Orthodontics, the appliance is mounted on a metallic base pad, which may be either plain or perforated, to which a pad of metal screen or mesh is attached by spot welding, so as to fix the screen to the base pad on the side of the pad opposite the appliance. Such a device, if not perforated, avoids the problem of excess cement flowing into the appliance by shielding the appliance from the cement, which must flow outwardly from the periphery of the pad, not through it. However, the spot welds destroy the mesh structure at the points of attachment of the screen to the pad, thereby decreasing the effectiveness of the adhesive in bonding the mesh to the tooth. Because of the flexible nature of the screen, many spot welds are necessary to ensure rigidity of this type composite pad, so that the mesh is not very effective. *Alternatively, if only a few spot welds are utilized, the mesh flexes so that the effectiveness of the appliance in the orthodontic treatment diminishes.*

First of all, Miller et al. refer to flexibility of the mesh itself. It does not discuss compliancy *between* the mesh and the bracket or an object striking the bracket. In the embodiment of elected Species I, a flexible sheet metal or foil base is attached around its perimeter to mesh bonding structure, which can be embedded in a rigid adhesive that secures the mesh against the surface of a tooth. By being attached only around its edge to the mesh, compliancy that absorbs impact is provided by the flexing of the flexible base. While the present claims are somewhat more broadly stated than this, the essential differences illustrated by this example are contained in the claims.

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Further, this last sentence of the patent background states that “*If* only a few spot welds are utilized, the mesh flexes ...”, resulting in an undesirably wobbly appliance by which “the effectiveness of the appliance ... diminishes.” While this last sentence of the background can itself be applied as prior art for what it says, as the Examiner has done in the 35 U.S.C. §102(b) rejection based on Miller et al., the sentence is not evidence that other prior art existed. Miller et al. is the only reference in the prior art mentioning a bracket having a flexible attachment to a bonding mesh, but it does so in a context that tells the reader that doing so would not be desirable, thereby discouraging the reader from going any further. As a result, no one would be motivated to try modifying a base-to-bonding-structure interface to develop resistance to impact by providing compliance in the bracket base to which mesh is selectively attached, or by otherwise providing compliancy *between* bonding structure and a bracket. Therefore, at least for purposes of 35 U.S.C. §103(a), Miller et al. cannot be said to render applicant's claims unpatentable. This is a classic case of a reference “teaching away” from an invention.

A reference teaches away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant. See United States v. Adams, 383 U.S. 39, 52, 148 U.S.P.Q. (BNA) 479, 484, 15 L. Ed. 2d 572, 86 S. Ct. 708 (1966) (“known disadvantages in old devices which would naturally discourage the search for new inventions”); In re Sponnoble, 56 C.C.P.A. 823, 405 F.2d 578, 587, 160 U.S.P.Q. (BNA) 237, 244 (CCPA 1969) (references taken in combination teach away since they would produce a “seemingly inoperative device”); In re Caldwell, 50 C.C.P.A. 1464, 319 F.2d 254, 256, 138 U.S.P.Q. (BNA) 243, 245 (CCPA 1963) (reference teaches away if it leaves the impression that the product would not have the property sought by the applicant).

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Because Miller et al. is the only reference in the prior art mentioning a bracket having a flexibility due to the manner of attachment to a bonding mesh, and since Miller et al. disparage the this manner of attachment, Miller et al. teach away from the adopting this manner of attachment and making further modifications from it to produce the claimed invention.

For the reasons stated above, it is submitted that the pending claims, as amended, are not anticipated by and patentable over the prior art. Accordingly, an early allowance is respectfully requested.

If any charges or credits are necessary to complete this communication, please apply them to Deposit Account 23-3000.

Respectfully submitted,

WOOD, HERRON & EVANS, L.L.P.

BY /Joseph R. Jordan/
Joseph R. Jordan, Reg. No. 25,686

2700 Carew Tower
Cincinnati, OH 45202
(513) 241-2324
(513) 241-6234 (Facsimile)